

REMARKS

The claims in this application under examination are 1-14. Claims 1, 3, 8 and 9 have been amended without addition of new matter. Support for the amendments to claim 1 can be found at page 8, line 5 and page 7, line 25 to page 8, line 6. Support for the amendment to claim 3 can be found at page 8, line 8. Support for the amendment to claim 8 can be found at page 6, line 26 to page 7, line 1. Support for the amendment to claim 9 can be found at page 7, lines 25-26 and page 9, lines 22-26.

**Claim Objections**

The Examiner objected to claims 8-9 for being in improper dependent form. These claims have been amended to conform to proper dependent form. Withdrawal of the objection is respectfully requested.

Claim Rejections Under 35 USC § 112

The Examiner has rejected claims 1-14 under 35 USC § 112 as being indefinite. The rejection of these claims is respectfully traversed.

Claim 1 has been amended to clarify those limitations that apply to each of formula (1) and formula (2). As such, the claims are no longer indefinite. Reconsideration of the claims and withdrawal of the rejection is respectfully requested.

Double Patenting

The rejection of claims 1-5 and 9 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 and 4 of U.S. Patent 6,218,569B1 is respectfully traversed. Accompanying this response is a terminal disclaimer, executed by an attorney of record with the proper empowerment statement, which as noted by the Examiner may be used to overcome such a non-statutory double patenting rejection.

35 USC § 102(e)

The Examiner, under 35 U.S.C. 102 (e), has rejected claims 1-6, 10 and 12-14 as being anticipated by Asakawa et al. (US 6280897 B1), claims 1-5, 10, and 12-14 as being anticipated by Choi et al. (US 5851727 A), and claims 1-5, 10 and 12-13 as being anticipated by Sinta et al. (US 5886102 A). The rejection of these claims is respectfully traversed.

Cited References

(i) Asakawa discloses a photosensitive composition that is a polymer having a repeating unit represented by the general formula (1a), (1b) or (4) (claims 1, 2 and 5, respectively). Further, the monomers used to make the polymers are also disclosed and includes  $\gamma$ -1-methylcyclohexyl methacrylate (column 42, lines 8-12, as Monomer (I-3)),  $\gamma$ -((2-methyl)isobornyl)methacrylate (column 42, lines 50-60,

as Monomer (I-7)), adamantan-4-carboxylic acid, 1-acylate (column 44, lines 35-50, as Monomer (I-15)), 2-hydroxy-2-methyl-1-methacryloyloxy pinane (column 42, as Monomer (I-6)), 2-(meth)acryloyloxy-3-pinane (columns 43-44, as Monomers (I-13) and (I-14)). Furthermore, polymers polymerized with use of Monomers (I-1)-(I-17) are described in Asakawa.

(ii) Choi discloses a photosensitive compound comprising the taught photosensitive polymer having the formula specified in claim 1 of the patent and a photoacid generator. Example 1 discloses tricyclodecanedimethanol monomethacrylate.

(iii) Sinta discloses an antireflective composition comprising a crosslinker and a binder of formula recited in claim 1 of the patent. The binder comprises a unit corresponding to (meth)acryloyloxymethyl anthracene. The anthracene ring or hydrogenated anthracene ring may have 0 to 9 (preferably 0, 1 or 2) substituents selected from a halogen, C<sub>1-8</sub> alkyl, C<sub>1-8</sub> alkoxy, C<sub>2-8</sub> alkenyl, C<sub>2-8</sub> alkynyl, cyano and nitro groups (claim 1, column 5, lines 1-30).

#### Comparison of the present invention and the cited references

It is respectfully urged that the cited references fail to disclose or teach the compounds represented by the formulae (1) and (2). Therefore, the subject matter of the present invention is novel in light of the cited references.

(i) With respect to compounds represented by the formula (1)

Although the Asakawa reference disclose a unit corresponding to 2-(2-hydroxy-4-methylcyclohexyl)propyloxy (meth)acrylate (column 9, lines 36-55) represented by the formula (5), this unit only has a monocyclic hydrocarbon ring. The Choi and Sinta references disclose a (meth)acrylate having a polycyclic hydrocarbon ring such as tricyclodecane or hydrogenated anthracene rings, but these compounds have a methylene group interposed between such hydrocarbon ring and (meth)acryloyloxy group. Thus, in these compounds, both  $R^1$  and  $R^2$  are hydrogen atoms.

(ii) With respect to compounds represented by the formula (2)

The Choi and Sinta references are silent for compounds represented by the formula (2). Asakawa discloses a (meth)acrylate having, as the ring Z, a cycloalkane ring (such as cyclopentane or cyclohexane rings as in Monomers (I-3)-(1-5)) or a bridged ring (such as isobornane, pinanone rings as in Monomer (I-7), (I-13) and (I-14)). However, these rings belong to a monocyclic ring or a bridged ring having a bicyclic hydrocarbon ring. Thus, Asakawa fails to disclose the compound having the ring Z in formula (2).

As mentioned above, the cited references fail to disclose or teach the present acid-responsive compound represented by the formulae (1) and (2). Therefore, the subject matter of claims is novel in the light of the cited references.

CONCLUSION

The Examiner is respectfully requested to enter this Reply After Final in that it raises no new issues. Alternatively, the Examiner is respectfully requested to enter this Reply After Final in that it places the application in better form for Appeal.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Jaconda Wagner (Reg. No. 42,207) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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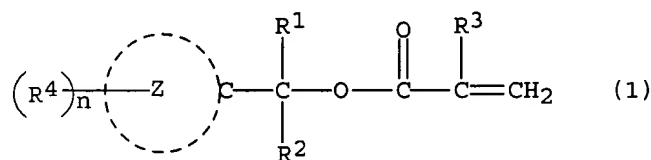
  
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Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS:

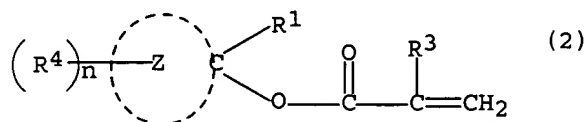
The claims have been amended as follows:

1. (Twice Amended) An acid responsive compound represented by the following formula (1) [or (2)]



wherein  $\text{R}^1$  [and  $\text{R}^2$  are the same or different from each other and each] represents a hydrogen atom, an alkyl group or a cycloalkyl group;  $\text{R}^2$  represents an alkyl group or a cycloalkyl group;  $\text{R}^3$  represents a hydrogen atom or a methyl group;  $\text{R}^4$  represents a hydrogen atom, a halogen atom, an alkyl group, an oxygen containing group, an amino group or an N-substituted amino group;  $n$  represents an integer of not less than 1; with proviso that all  $\text{R}^4$ 's are not concurrently hydrogen atoms, and  $\text{R}^4$  may be varied according to  $n$ ; the Z ring represents a [monocyclic or] polycyclic alicyclic hydrocarbon ring; [in formula (1),]  $\text{R}^1$  and  $\text{R}^2$  may, jointly and together with adjacent carbon atom, form an alicyclic hydrocarbon ring,

[provided that the acid-responsive compound is the compound represented by the formula (2),] or by the following formula (2)



wherein  $R^1$  represents an alkyl group or a cycloalkyl group;  $R^3$  represents a hydrogen atom or a methyl group;  $R^4$  represents a hydrogen atom, a halogen atom, an alkyl group, an oxygen-containing group, an amino group or an N-substituted amino group;  $n$  represents an integer of not less than 1; with proviso that all  $R^4$ s are not concurrently hydrogen atoms, and  $R^4$  may be varied according to  $n$ ; and  $Z$  represents a [monocyclic or] polycyclic alicyclic hydrocarbon ring selected from the group consisting of [cycloalkanes,] spiro hydrocarbon rings, ring assembly hydrocarbon rings, fused-ring hydrocarbon rings, and bridged rings,

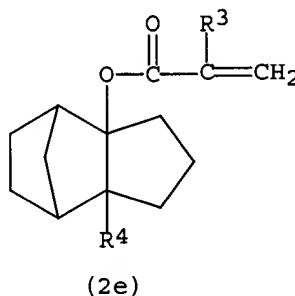
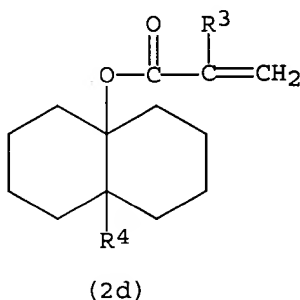
wherein the bridged ring is selected from the group consisting of tricyclic hydrocarbon rings, tetracyclic hydrocarbon rings and hydrogenated dimers [or] of dienes.

3. (Amended) The acid-responsive compound according to Claim 1 wherein, in the formula (1), the  $Z$  ring is a bridged ring-type hydrocarbon ring comprising 2 to 4 rings.

8. (Amended) The acid-responsive compound according to Claim 7, wherein  $R^1$  in the formula (1a) is a hydrogen atom or a straight-chain or branched-chain  $C_{1-4}$  alkyl group, and  $R^1$  in the formula (2a) is a straight-chain or branched-chain  $C_{1-4}$  alkyl group;  $R^2$  is a hydrogen atom or a straight-chain or branched-chain  $C_{1-4}$  alkyl group;  $R^3$  is a hydrogen atom or a methyl group; at least one of  $R^4$ s

is at least one oxygen-containing group selected from the group consisting of oxo group, hydroxyl group, an alkoxy group, carboxyl group, an alkoxy carbonyl group, a cycloalkyloxy carbonyl group, an aryloxy carbonyl group, an aralkyloxy carbonyl group, hydroxymethyl group, carbamoyl group, an N-substituted carbamoyl group and nitro group.

9. (Amended) [The] An acid-responsive compound [according to Claim 1 which is] represented by the following formula (2d) or (2e);



wherein R<sup>3</sup> represents a hydrogen atom or a methyl group; R<sup>4</sup> represents a hydrogen atom, a halogen atom, an alkyl group, an oxygen-containing group, an amino group or an N-substituted amino group [R<sup>3</sup> and R<sup>4</sup> are as defined above].